ABSTRACT

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EFFECTIVENESS OF A DIFFERENTIATED SUPERVISION MODEL IN SYSTEMIC RESOURCE ALLOCATION

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This study examines the ability of a differentiated supervision model to initiate quality improvements in school systems by classifying schools according to several identified factors and modifying the resources allocated to all schools based on their supervision classification.

This study was based on the premise that individual schools vary in their resource needs due to both internal and external factors, and school systems can improve the performance of individual schools by customizing the supervision of and resources allocated to those schools.

Conceptual development and an archival post-hoc analysis approach were used to analyze the effects of the supervision model on the improvement of schools in a large urban school district. The researcher developed the supervision model and collected data regarding school characteristics, classification, and performance for individual schools during the first and sixth years of implementation.

The researcher found that the grade level of schools, the years of experience of school principals, the socioeconomic status of schools, and monetary funding significantly impact the ability of the differentiated supervision model to impact school improvement. Additionally, the results of the study indicate that schools with the lowest performance at the initiation of the classification model had significantly higher levels of improvement than schools with higher initial performance.

The conclusions drawn from the findings suggest that utilizing a customized approach to the supervision of individual schools and the resources allocated to those schools can lead to performance improvements. School systems can benefit from the reduction in scarce resources necessary for schools that require less direct supervision and the increased performance results from schools that are assigned increased supervision and resources.

EFFECTIVENESS OF A DIFFERENTIATED SUPERVISION MODEL IN SYSTEMIC RESOURCE ALLOCATION

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LIST OF ABBREVIATIONS

ABBREVIATION		
1.	CSR	Comprehensive School Reform
2.	DSCM	Differentiated Supervision Classification Model
3.	FCAT	Florida Competency Assessment Test
4.	GCRCT	Georgia Criterion Reference Competency Test
5.	GHSGT	Georgia High School Graduation Test
6.	ITBS	Iowa Test of Basics Skills
7.	MGWA	Middle Grades Writing Assessment
8.	NCLB	No Child Left Behind
9.	PDB	Performance-driven budgeting
10.	SAP	School Achievement Plan
11.	SRT	School Reform Team

CHAPTER 1

INTRODUCTION

Introduction

As accountability for student performance increases, local education agencies are confronted with the challenging task of providing maximum support to schools that have the greatest needs while simultaneously maintaining the success of and continually improving high performing schools. Accountability for kindergarten through twelfth grade (K-12) school performance has recently received increased attention from school systems, municipalities, state governments, and federal agencies. The 2001 reauthorization of the Elementary and Secondary Education Act, also known as No Child Left Behind (NCLB), incorporates testing and accountability requirements that increase student testing and holds all schools accountable for student performance. This legislation marked a major departure from the federal government's traditional monitoring and guidance role regarding elementary and secondary education. The NCLB legislation utilizes progress and performance indicators as a judge of a school's success. It requires that states administer reading and mathematics tests annually in grades three through eight and during one year in high school beginning in school year 2005-2006. These requirements affect almost 25 million students each school year (National Center for Education Statistics, 2002).

While the No Child Left Behind legislation incorporated increased testing for the purposes of recognizing high performing schools, providing incentives of improvement and punishing those schools that failed to either meet established standards or make adequate progress, there are no provisions in the legislation for providing additional resources for those schools that have greater needs. Additionally, there are few incentives for school districts to customize the supervision of schools and the resources allocated to individual schools based on the characteristics and assessed needs of the schools.

In 2000, prior to the enactment of the No Child Left Behind legislation, a major urban school district located in the southern region of the United States implemented a differentiated supervision classification model. The intent of the model was not to rank or grade schools on their performance. Instead, the intent was to provide a mechanism by which administrative support structures could direct additional resources to schools with greater need and provide more autonomy to schools that are performing and progressing at higher levels. This innovative approach customizes the supervision of schools and the resources allocated to schools based on both performance indicators and progress indicators.

Purpose

The purpose of this study is to investigate if a differentiated supervision classification model (DSCM) can assist in guiding the improvement of the quality of education for schools. The results of this study provide school district level administrators, local school boards of education, and state and national education

agencies with a methodology to strategically direct resource allocation in order to improve student achievement by supporting schools that demonstrate greater needs.

Previous Strategies/Sources of the Problem

The differentiated supervision classification model is a proactive approach to improve the quality of education for all students. Prior to the implementation of the model in the subject school system, multiple measures of performance and progress were utilized to assess school improvement and school quality. These measures were not utilized consistently between schools or across grade levels. The motivation for this study is to determine the impact of utilizing performance and progress indicators as a predictor of an elementary or secondary school's needs in order to provide guidance to improve its overall success based on multiple indicators. Performance indicators for the purpose of this study refer to student achievement on standardized tests, student attendance rates, and enrollment in higher-level academic courses. Progress indicators refer to established benchmarks related to the performance indicators.

The rationale for implementing the differentiated supervision classification model is two-fold: 1) to identify schools with the greatest need for assistance in achieving the optimal goal of improving student achievement; and 2) to provide more support to schools that demonstrate greater need. For the subject school system, this represents a fundamental revision to the manner in which schools are assessed and supported.

Statement of the Problem

The focus of this study centers on whether using a weighted algorithm that includes progress and performance data can be used as a means to effectively monitor a

schools improvement by implementing a strategy for supporting schools based on predicted need. The study takes place a major urban school district located in the southern region of the United States.

Significance of the Study

This study examines the impact of the differentiated supervision classification model that incorporated progress and performance data over a six-year period of time. The significance of the analysis of the impact of the DSCM will benefit the educational research and educational practitioner communities in the following ways:

- ◊ Provide system level administrators a viable method of support and supervising schools based on demonstrated need.
- ◊ Provide school level administrators a viable methodology in supporting and supervising classroom teachers based on teacher targets and student performance levels.
- ◊ Address a research area that focuses on supervising schools that demonstrate a greater need for support.
- ◊ Increase the understanding of whether implementing school targets and benchmarks improve the overall quality of teaching and learning in the school environment.

Organization of the Study

The next section of this dissertation provides background information on school support structures and school accountability systems. Section three discusses the theoretical framework, identifies those factors in the model that are tested, and states the research hypotheses. The research methods employed, data analysis, and key findings

are described in section four. The final section summarizes the research with implications, limitations of the study, and recommendations for further research based on the findings of this project.

CHAPTER II

REVIEW OF THE LITERATURE

Organization of the Review

The focus of this study was to examine if school improvement occurs by providing more supervision and resources to schools with greater needs. The creation of a differentiated supervision classification model that incorporated an algorithm was utilized in identifying schools with greater need. This study considered the role and impact of grade level, principal experience, socioeconomic status, and resource allocation on the differentiated supervision classification model. In examining the literature and related research to supervising and supporting schools, the review of the literature focused on the supervision of schools, school accountability systems, and school support systems.

Supervision of Schools

The review reflects the relationship of these areas and their role in school improvement. The first area of the review focuses on the supervision of schools followed by discussion accountability and support systems

As education reformers have sought to improve the academic performance of public schools in the United States, they have employed widely varying monitoring and/or accountability strategies. These monitoring and accountability strategies are not

only employed in K-12 public schools, but also in higher education and the business community. In 2001, 45 states required public schools or school districts to issue "school report cards" that included a wide range of information. Twenty-seven states also provide comparative ratings of schools (Boser, 2001). The most recent round of high-stakes testing grew out of the standards-based reform movement that began in the early 1990s (Abrahams, 2003).

A key characteristic of accountability strategies centers on performance indicators or targets that identify criteria used to determine whether schools and students have reached the desired level of achievement. Performance indicators related to education are measurable characteristics of educational processes and procedures used by the district to deliver services according to the Baldridge Award for Education (Arcaro, 1996). Several states have combined two of these strategies to improve the academic performance of schools: performance indicators and accountability (Ogawa, 2000). In an effort to be proactive in meeting the needs of students, school districts across the nation are devising and implementing strategic processes for monitoring school progress in various ways Identifying specific performance indicators to measure and provide the proper support structure is important to leading and guiding schools. Implementation of customized support systems amount to what the Baldridge Award for Education refers to as 'managing by fact' (Arcaro, 1996).

Facts such as student performance and the analysis of that data support a variety of educational purposes, including planning, reviewing performance, improving procedures, and benchmarking educational quality performance against other schools.

Arcaro (1996) suggests that "a system of indicators tied to student and district performance factors represent a clear and objective basis for aligning all activities of the district toward common goals." Rothman notes that not all schools are equipped well enough to move at the same pace, and it is likely that the schools that have traditionally lagged behind would be the ones that would continue to do so if each school were left to change on its own (1995).

Berne and Stiefel (1997) suggest "a well-defined set of student resource variables would improve equity studies at the school level including studies that use administrative data, particularly if those variables are capable of serving as models for other data sets." Picus (2000) rationalized that school finance research has a long history of analyzing funding equity. He concluded that most of the research related to school finance has looked at spending differences across school district--not within a school district. Very few studies have considered school-level resource equity either within districts or across districts in an individual state. Prior research related to the supervision and support of individual schools emphasizes the need for both customized support and the testing of such of support system in terms of school improvement.

School Accountability Systems

The Southwest Educational Development Laboratory (SEDL) study examined district level patterns of resource allocation, district and school resource practices implemented to improve student performance, and barriers and challenges faced by districts and schools to efficient resource allocation (Pan, 2003). SEDL researchers examined data on student performance as well as fiscal and human resource allocation

from all independent school districts within each of four study states: Arkansas, Louisiana, New Mexico, and Texas. SEDL also selected twelve improvement school districts from the larger sample that showed consistent gains in student performance to more closely examine the resource allocation patterns and practices of successful school districts.

The findings from SEDL's research demonstrated a strong relationship between resources and student success. Furthermore, the results indicated that allocating resources within select areas and for certain practices might make a significant impact on student performance. In short, both the level of resources and their explicit allocation seem to affect educational outcomes. Specifically, this study found that: high-performing districts showed different resource allocation patterns in specific fiscal and staffing categories than low-performing districts. A general pattern emerged where higher performance was associated with higher spending for instruction, core expenditures, and number of teachers, with lower spending for general administration and number of administrative staff. In all four states, high-performing districts spent more on instruction as a share of current expenditures; while in three states, high-performing districts spent more on instruction per pupil and employed more teachers per 1,000 students. The differences in resource allocation between the low-performing and high-performing groups were reduced in two of the four states when the comparisons controlled for demographic factors and socioeconomic status. Improvement districts showed different resource allocation patterns in specific fiscal and staffing categories than districts of similar size. A majority of the twelve improvement districts spent more per pupil in

instruction and instruction-related areas, and also increased allocations for these areas faster than comparison districts over the five-year period examined. At the same time, the twelve districts were found to re-allocate resources away from administrative and other non-instructional areas.

In 1999, the California legislature approved the Public Schools Accountability Act (PSAA), which incorporated three central components designed to hold schools accountable for improving student outcomes. The initial PSAA components were the Academic Performance Index (API), the Immediate Intervention/Underperforming Schools Program (II/USP), and the High Performing/Improving Schools Program (also known as the Governor's Performance Award (GPA)). Later, the High Priority Schools Grant Program (HPSGP) was incorporated into the PSAA legislation. The state of California now faces the challenge of integrating these components with the federal NCLB Act. In November 2004, AIR was contracted by the California Department of Education to conduct a continuation study of the II/USP component of PSAA. The II/USP provided funds to low-performing schools in the state to develop and implement an Action Plan for school improvement, with the assistance of a state-approved External Evaluator. Schools subsequently had two to three years to implement the Action Plan, and are subject to sanctions at the end of this implementation period if they did not improve student performance. As in the 2003 PSAA evaluation, the state of California observed a significant district effect on the achievement trajectories of low-performing schools in the state. Individual school districts in California can institute policies and supports designed to improve the work of all of their low-performing schools,

irrespective of program participation. These include technical assistance and professional development, particularly around systematic assessment and data use, as well as the targeting of resources to low-performing schools. Districts can also provide a focus for schools' improvement efforts. Such supports and focus did not appear to be present in all districts or realized by all schools.

Jones (2004) argues where there are clear cases of faulty local accountability systems — those lacking any of the four elements (appropriate assessment systems; adequate opportunities to learn; responsiveness to students, parents, and community; or organizational capacity) — supportive efforts from the state and federal levels should be undertaken. Jones envisioned at least three cases in which the state would take on a more assertive role: 1) to investigate claims or appeals from students, parents, or the community that the local accountability system is not meeting the standards set for such systems; 2) to require local schools and districts to respond to findings in the data that show significant student learning deficiencies, inequity in the opportunities to learn for all students, or lack of responsiveness to students, parents, or communities; and 3) to provide additional resources and guidance to improve the organizational capacity of the local school or district.

Goldhaber and Hannaway (2004) concluded that the Florida A+ Plan appears to have had a significant impact on the instructional focus for both high-performing and low-performing schools. In their case studies and in the actual Florida Competency Assessment Test (FCAT), results showed that administrators and teachers are targeting instruction to improve FCAT scores, particularly on the writing portion of the exam. The

case studies suggest that there is a very real and tangible social stigma attached to being judged a low-performing or failing school, at least for teachers. They noted the fact that high performing schools also feel considerable social pressure to maintain their standing. Social pressure and reputation far overshadowed any threat of punitive measures from the state. Their assessment of the implications of any internal maneuvering might result over time in inequitable resource allocation.

In an examination of legal issues related to accountability systems and No Child Left Behind, Parkes and Stevens (2003) concluded that school accountability systems are measurement systems and thus are subject to all weaknesses and threats to any other kind of measurement system. They mention that among many others, the reliability of the information, the validity of the use of that information, the worthiness of the purpose of the system, and the fair and equitable consequences of the system need to be carefully examined and validated. States that fail to consider these measurement issues may find themselves defending their actions in court. Nonetheless, the motivation for cautious development and implementation of school accountability systems should not be liability protection but rather the betterment of education for all students. Not only will poorly designed school accountability systems face court challenge, they will also fail to achieve their goal of improving education.

School Support Systems

Greg Orlofsky (2002) found that high poverty, high minority schools received significantly less state and local money than did other schools. Jerald (2002) determined

that students in high poverty, high minority schools were almost twice as likely to be taught by teachers who were inexperienced or teaching outside their specialties.

Lashway (2003) discusses that states and districts should align policies and practices with academic goals. In a multi-tiered governance system (federal, state, and local), schools have often been subject to disjointed or contradictory policies, "zigging one way to satisfy a state or federal mandate and zagging back again to keep the district office happy." The author also notes that some states have made major strides in aligning goals, instruction, and assessment.

In the pilot schools implementing performance-driven budgeting (PDB), the impact study found a small, but statistically significant, increase in student academic outcomes (Seigel 2003). Seigel (2003) found that the PDB pilot program confirmed its core hypothesis: Student achievement does improve when schools have significant control over their resources and instructional planning. Students in the sixty-one schools that adopted PDB had slightly higher test scores than their counterparts in their own districts and in the city as a whole (Viadero, 2002).

CHAPTER III

THEORETICAL FRAMEWORK

Development of Differentiated Supervision Model

A school's differentiated supervision classification is determined by the utilization of a weighted formula, with 50% assigned to progress data and the other 50% distributed across performance data. Progress data is defined as the individual school targets that contribute to the achievement of school system targets in the areas of student achievement on standardized tests, attendance, and enrollment in higher-level courses. Performance data is defined as the results of student performance on state-mandated standardized tests (State Criterion Reference Competency Test (CRCT), Iowa Test of Basic Skills (ITBS)/Stanford 9, State Writing Assessment, and the State High School Graduation Test (HSGT)).

As a means of systemically improving student achievement, the subject district embarked upon an aggressive plan to improve the quality of instruction in all classrooms for all students. Some of the major tenets of the plan included setting individual school targets, teacher professional development, and implementation of comprehensive school reform designs, implementing a facilities master plan, and integrating a new technology infrastructure. The school targets focus on increasing enrollment of higher-level courses,

Knowing that different schools have different needs, the researcher decided to devise a mechanism to make sure that schools with the greatest need received the most support and guidance from the central administration support structures. The vision for the differentiated supervision model is to inform district administrators of the severity of an individual school's needs and to provide guidance for the requisite level of supervisory and resource support.

The differentiated supervision model was designed by the researcher and implemented in the subject district in the fall of 2000. The weighted formula varies based on the grade level being appraised. For elementary schools, the total score for each school is a weighted average of the percentage of targets met, the performance of students in grade 4 on the Georgia Criterion-Referenced Tests (GCRCT) in Reading, Language Arts, and Mathematics, and the fifth grade writing results. In the middle schools, the total score for each school is a weighted average of the percentage of targets met, performance of students in grades 6 and 8 on the GCRCT in Reading and Mathematics, and the performance of the eighth graders on the Middle Grades Writing Assessment (MGWA). In high schools, the total score for each school is a weighted average of the percentage of targets met and the performance of students on the English/Language Arts, Mathematics, Writing, Social Studies, and Science components of the Georgia High School Graduation Tests (GHSGT). Schools are reclassified annually based on the weighted formula. There are three classifications that a school can

be placed into based on the total score from the weighted formula. The total DSCM score categorized schools as follows:

- Nondirective 100 – 84%
- Collaborative 83 – 69%
- Directive below 69%

A designation of nondirective is described as a school that has the autonomy to plan and implement the school's instructional program with a low level of central office oversight and supervision. Schools designated as collaborative are allowed to negotiate the level of autonomy to plan and implement its instructional program with a moderate level of supervision from central office support structures. All directive schools plan and implement the instructional program with a high level of supervision and resource support from central office. Table 1 summarizes the levels of autonomy based on the classification.

Table 1: Differentiated Supervision Descriptions

		Non-Directed	**Collaborative**	**Directed**
1	MONTHLY REPORT	Required	Required	Required
2	PRINCIPALS' MEETING	Required	Required	Required
3	STAFF DEVELOPMENT	Design own plan as long as it is aligned to School Achievement Plan (SAP) and CSR.	Design own plan aligned to the SAP with the approval by Executive Director	Work with School Reform Team (SRT) staff to design plan
4	STAFF EVALUATION	Required	Required	Required
5	BUDGET	Flexibility within district guidelines or approval to deviate within allotment	Negotiate within district guidelines in collaboration with the Executive Director	Flexibility with the involvement and approval of the Executive Director

Table 1: Differentiated Supervision Descriptions, continued

6	STAFFING	Flexibility in how staff is used with a rationale	Flexibility in collaboration with the Executive Director	Some flexibility with the involvement and approval of the Executive Director
7	STUDENT ACHIEVEMENT PLAN	Annual update if previous year targets were met	Submit written plan	Required school level leadership team must present plan to SRT orally for approval

Figure 1 diagram the relationship between the factors that were included as inputs into the calculation of the DSCM score and the resulting DSCM category assigned to individual schools. Figure 2 reiterates the distinctions between the levels of supervision and resource allocation that were assigned to schools based on their DSCM category.

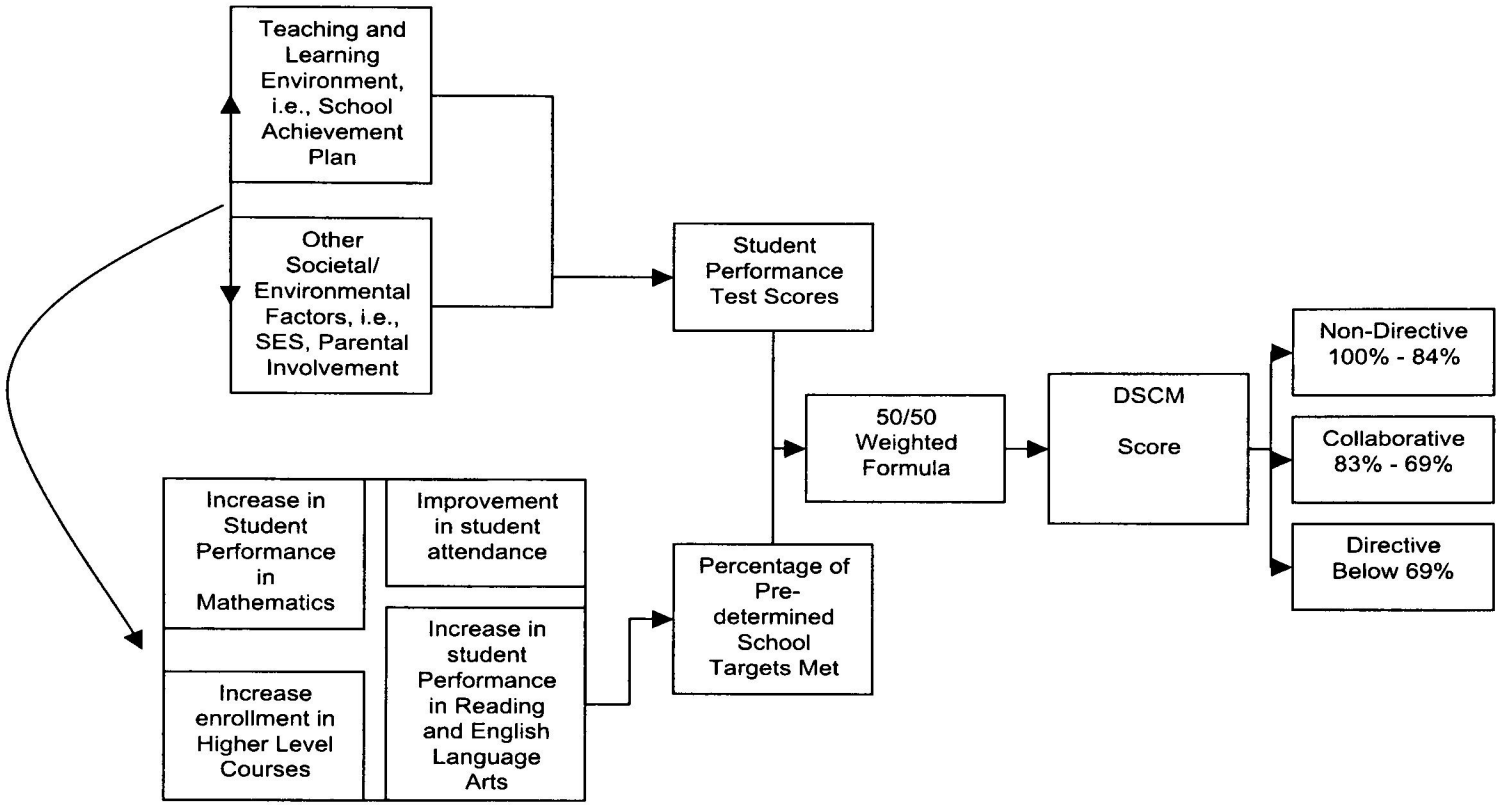


Figure 1: Differentiated Supervision Classification Model

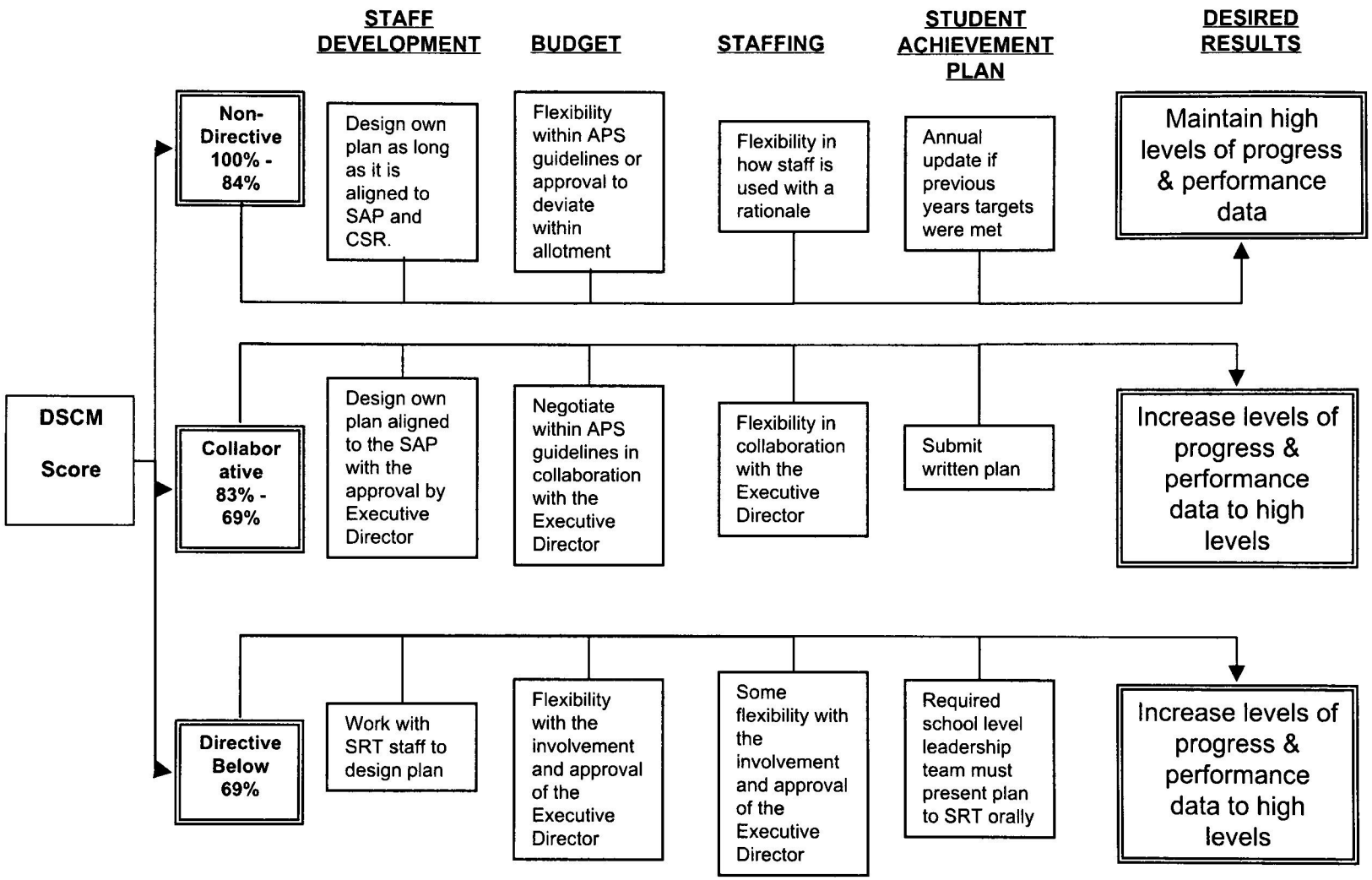


Figure 2: Differentiated Classification Supervision Model Theory of Action and Desired Results

Statement of Theory and Variables

Picus (2000) determined that although no studies to date have looked systematically at student-level resource allocation patterns, it is clear that much of the school finance community would benefit from such knowledge. However, collection of student-level data is complex and difficult. He urges the research community to develop strategies to collect this information accurately and without undue burden on local school officials is critical. Picus (2000) concluded that while school-level data are attractive for a number of reasons, student-level data collections have the potential to be more cost-effective and more useful in improving our understanding of student learning.

The theoretical framework for the current study focuses on independent variables that include school grade level, mathematics test performance, English Language Arts test performance, reading test performance, higher level course enrollments, student attendance, percent of school targets met, Comprehensive School Reform Model, socio-economic status, and Title I per pupil resource allocation. Secondary schools historically have demonstrated lower levels of student performance (GA DOE). Additionally, curriculum, organizational structures, school climate, accountability requirements, student test requirements, promotion and retention requirements, parental involvement, and many other conditions differ across and within grade levels. Socioeconomic status, student attendance patterns and financial resource allocations vary greatly across grade levels.

The dependent variables include a school's DSCM 2000 category, DSCM 2006 category, DSCM 2000 score, DSCM 2006 score, and the schools' DSCM improvement

from 2000 to 2006. The DSCM categories and scores were determined by use of the DSCM algorithm. The definitions of variables are summarized in the definition of variable terms table (Table 2).

Table 2. Definition of Variable Terms

Variable Name	Variable Type	Definition
Mathematics Test Performance	Independent	Refers to test results from state mandated mathematics assessments. These include Georgia Criterion Reference Competency Test, Iowa Test of Basic Skills, and Georgia High School Graduation Test.
English Language Arts Test Performance	Independent	Refers to test results from state mandated English Language Arts assessments. These include Georgia Criterion Reference Competency Test, Georgia Writing Assessment, Iowa Test of Basic Skills, and Georgia High School Graduation Test.
Reading Test Performance	Independent	Refers to test results from state mandated Reading assessments. These include Georgia Criterion Reference Competency Test, Georgia Writing Assessment, Iowa Test of Basic Skills, and Georgia High School Graduation Test.

Table 2. Definition of Variable Terms, continued

DSCM 2000 classification	Dependent	Schools are classified as non-directive, collaborative, and directive based on performance and progress data.
DSCM 2006 classification	Dependent	Schools are classified as non-directive, collaborative, and directive based on performance and progress data.
DSCM 2000 Score	Dependent	Score is generated from the use of the DSCM algorithm
DSCM 2006 Score	Dependent	Score is generated from the use of the DSCM algorithm
Higher Level Course Enrollment	Independent	This variable is applicable to secondary schools only. It addresses changes in enrollment in Algebra and Geometry in middle schools. At the high school level, it refers to increased enrollment in Advance Placement Courses, Calculus, Chemistry, and Physics.
Student Attendance	Independent	Refers to changes in the percent of students with 10 or more days absent from school within the full academic year.
Grade Level	Independent	Refers to elementary as schools covering grades kindergarten through grade five and secondary schools.

Table 2. Definition of Variable Terms, continued

Socio-Economic Status	Independent	Refers to the percentage of students on free or reduced lunch.
Comprehensive School Reform Design	Independent	Refers to whole school instructional programs that were adopted and implemented into the schools instructional design.
Title I Allocation	Independent	Refers to per pupil federal Title 1 allocation to schools from central office.
Adequate Yearly Progress (AYP)	Independent	AYP holds each local school district and each individual school accountable for the academic success of students. In Georgia, AYP requires schools to meet standards in three areas: Test Participation, Academic Performance (for both Mathematics and Reading/English Language Arts), and a Second Indicator.
Targets	Independent	The target areas include improving student attendance, enrollment in higher-level courses and incrementally increasing student achievement on standardized tests in mathematics, language arts and writing.

Linkages Among Variables

Several school based characteristics and measurements are utilized in the assignment of a DSCM score and the resulting DSCM classification. In the second phase of the research, independent variables including socioeconomic status, principal experience, and grade level are examined as potential determinants of school improvements within a DSCM resource allocation framework.

Prior Research and the Current Study

As discussed in the prior subsections, several studies have indicated the importance of detailed data analysis related to the supervision of schools, school accountability systems, and resource allocation of schools. It is critical to determine whether enhanced analysis of available to data can be utilized to effectively categorize schools based on their documented need. Also, it is important to determine whether providing customized supervision and resource allocation based on such a categorization can lead to significant improvements in schools over time.

Research Questions

The research questions for this study were designed to investigate whether the goal of improving student achievement is supported by targeting resource allocation and level of central office oversight based on school level needs. Implicit in the research is a focus on the relationship between supporting schools through resources and improving school performance. The research questions for this study are as follows:

- ◊ Is there a statistically significant difference between the improvement of elementary schools and secondary schools that have implemented a DSCM model?

- ◊ Is there a statistically difference between the improvement of schools Originally ranked in the lowest category and those originally ranked in the highest category as a result of implementing the DSCM model?

- ◊ Is there a statistically difference in the improvement of schools based on the SES level of the student body as the result of implementing the DSCM model?

- ◊ Is there a statistically difference between the improvement of schools based on the years of experience of the principal at the school as a result of implementing the DSCM model?

- ◊ Is there a statistically significant difference in the improvement of schools based on monetary resources allocated to schools as the result of implementing the DSCM model?

Hypotheses

The hypotheses for this study were designed to investigate if the goal of improving student achievement is supported by targeting resource allocation and level of central office oversight based on school level needs. Additionally, the hypotheses examine the extent that school factors may impact the ability of the DSCM model to succeed in this goal.

The current research focuses on the effect of situational factors such as socioeconomic status, principal experience, and grade level on the ability of a DSCM framework to result in school improvement. The following hypotheses are developed based on the findings of prior research examining accountability systems and resource allocation frameworks:

- ◊ H1 There is no statistically significant difference between the improvement of elementary schools and secondary schools that have implemented a DSCM model.

- ◊ H2 There is no statistically difference between the improvement of schools Originally ranked in the lowest category and those originally ranked in the highest category as a result of implementing the DSCM model.

- ◊ H3 There is no statistically difference in the improvement of schools based on the SES level of the student body as the result of implementing the DSCM model.

- ◊ H4 There is no statistically difference between the improvement of schools based on the years of experience of the principal at the school as a result of implementing the DSCM model.

- ◊ H5 There is no statistically significant difference in the improvement of schools based on monetary resources allocated to schools as the result of implementing the DSCM model.

CHAPTER IV

METHODOLOGY

Research Design

For the tests of the five hypotheses related to the impact of situational factors on the ability of schools to improve in a DSCM framework, the dependent variable examined is school improvement. For the purposes of this research, school improvement is operationalized as the change in DSCM score from year one to year six of implementation of the DSCM framework within the subject district. The quantitative research methods are described in the following two paragraphs.

The hypotheses related to the impact of leadership experience and grade level of school on school improvement within a DSCM framework are tested in a 2 (Grade Level of School) x 4 (Principal Experience) mixed factorial design with two between-subjects factors (see Figure 3). The two between-subjects factors are Grade Level of School (elementary or secondary school) and Principal Experience (one to two years, three to four years, five to six years, or seven or more years of experience as principal of school).

		Grade Level	
		Elementary	Secondary
Principal Experience	1 - 2 years		
	3 – 4 years		
	5 – 6 years		
	7 or more years		

Figure 3. Study Design (2 x 4)

The hypothesis related to socioeconomic status is tested utilizing an analysis of variance examining the impact of this factor on school improvement. The between subject factor is the percentage of students on free or reduced lunch by group ranges of 90 – 100% of students, 80 – 89% of students, 70 – 79% of students, 50 – 69% of students, and 0 – 49% of students. Differences in improvement between original ranked lowest performing schools and original ranked higher performing schools are measured with an independent samples t-test for equality of means.

The hypothesis related to Title I allocation is tested using an independent samples t-test. The comparison of means was classified into two group's ranging of $0 to $700 per student which represented 33 schools and $800 to $821 per student representing 44 schools. None of the subject schools were in the $701 to $799 per student.

The hypothesis related to school improvement for original ranked lowest performing schools is tested using an independent samples t-test. There are 34 target group schools and 44 originally ranked higher performing schools.

Description of Study Population and Target Schools

The subject school district has a student population of approximately 47,000 schools in 89 schools. The present school district superintendent has been in place since 1999. The upper administration of the district also includes a deputy superintendent of instruction and five school reform teams (SRTs), each led by an executive director who is responsible for a number of schools. Other central administration instructional functions include professional development, an office of student programs and services, and an office of research planning and accountability.

The 78 schools included in this study represent those schools that existed in the same configuration in both years one and six of DSCM implementation. Schools that consolidated, were closed, or newly opened during the implementation were excluded from the study.

Thirty-four schools were identified as the lowest performing schools based on the initial assignment of the DSCM score and categorization. These 34 schools received the lowest original scores at both the elementary and secondary level and are compared with the remaining 44 schools in the quantitative analysis.

Summary of Methods

Prior to the model design that is being evaluated in this study, the subject school district attempted several approaches or designs aimed at improving the achievement of

individual schools. Some designs took into account singular performance indicators across individual grade bands. One of the designs classified schools differently on each individual grade in the school. For example, one elementary school was targeted for three different levels of oversight based on the performance of students in three different grades. Upon further scrutiny by key instructional leaders in the subject school district, these initial designs were determined to be unacceptable. The researcher of this study proposed the differentiated supervision classification model being evaluated in the study to the district officials. The premise of the proposal presented to the district was based on those factors that the subject district and existing research considered to be important: school progress indicators and performance indicators. The use of a software-based statistical analysis program was utilized to conduct the analysis of variance and the independent samples t-test.

CHAPTER V

ANALYSIS OF DATA

Descriptive Statistics and Results

Appendix A includes the official subject school district documentation related to the implementation of the differentiated supervision classification model. Included in the documentation are the communicated rationale for model implementation, the methodology developed to calculate scores, the summary of the developed framework, and detailed results of the year one score assignments and classifications for individual schools.

Table 3 describes the grade level (elementary or secondary), assigned school reform team (SRT), years of principal experience at that school, and socioeconomic status for all of the 78 schools in the study. Socioeconomic status is measured as the percentage of students in a school that receive free or reduced-price lunches.

Table 3. Description of 78 Schools in Research Study

School	Grade Level	School Reform Team	Principal Experience	Socio-Economic Status
PS101	Elementary	SRT 1	4	91.37
PS102	Elementary	SRT 1	1	63.56
PS103	Elementary	SRT 2	6	96.30

Table 3. Description of 78 Schools in Research Study, continued

PS104	Elementary	SRT 1	5	97.32
PS105	Elementary	SRT 4	6	89.90
PS106	Elementary	SRT 4	5	91.39
PS107	Elementary	SRT 4	3	7.85
PS108	Elementary	SRT 3	12	88.37
PS109	Elementary	SRT 2	1	87.75
PS110	Elementary	SRT 1	10	83.29
PS111	Elementary	SRT 3	8	57.89
PS112	Elementary	SRT 2	8	87.61
PS113	Elementary	SRT 4	10	83.57
PS114	Elementary	SRT 1	4	87.75
PS115	Elementary	SRT 1	6	86.12
PS116	Elementary	SRT 3	2	89.85
PS117	Elementary	SRT 2	4	77.09
PS118	Elementary	SRT 2	4	91.76
PS119	Elementary	SRT 3	6	96.61
PS120	Elementary	SRT 1	4	82.07
PS121	Elementary	SRT 1	3	77.74
PS122	Elementary	SRT 4	3	95.46
PS123	Elementary	SRT 2	24	98.83
PS124	Elementary	SRT 4	12	88.52
PS125	Elementary	SRT 1	6	86.65
PS126	Elementary	SRT 3	1	84.23
PS127	Elementary	SRT 3	2	89.49

Table 3. Description of 78 Schools in Research Study, continued

PS128	Elementary	SRT 2	8	85.59
PS129	Elementary	SRT 2	8	6.71
PS130	Elementary	SRT 4	8	92.36
PS131	Elementary	SRT 1	7	79.09
PS132	Elementary	SRT 1	6	17.57
PS133	Elementary	SRT 3	3	83.93
PS134	Elementary	SRT 1	4	12.75
PS135	Elementary	SRT 3	5	88.39
PS136	Elementary	SRT 1	5	88.15
PS137	Elementary	SRT 1	5	74.19
PS138	Elementary	SRT 1	2	41.22
PS139	Elementary	SRT 4	4	93.57
PS140	Elementary	SRT 4	4	88.51
PS141	Elementary	SRT 2	2	10.21
PS142	Elementary	SRT 4	6	94.31
PS143	Elementary	SRT 2	6	82.39
PS144	Elementary	SRT 4	3	93.43
PS145	Elementary	SRT 2	2	93.25
PS146	Elementary	SRT 3	2	81.03
PS147	Elementary	SRT 4	3	86.56
PS148	Elementary	SRT 1	4	91.41
PS149	Elementary	SRT 2	4	96.78
PS150	Elementary	SRT 1	16	54.79

Table 3. Description of 78 Schools in Research Study, continued

PS151	Elementary	SRT 4	13	95.20
PS152	Elementary	SRT 3	7	95.57
PS153	Elementary	SRT 4	9	78.20
PS154	Elementary	SRT 4	3	87.24
PS155	High	SRT 5	1	62.93
PS156	High	SRT 5	5	55.26
PS157	High	SRT 5	15	63.20
PS158	High	SRT 5	4	76.84
PS159	High	SRT 5	1	73.55
PS160	High	SRT 5	1	38.41
PS161	High	SRT 5	3	60.67
PS162	High	SRT 5	4	72.62
PS163	High	SRT 5	1	51.29
PS164	Middle	SRT 1	5	76.64
PS165	Middle	SRT 4	5	79.26
PS166	Middle	SRT 3	1	69.19
PS167	Middle	SRT 4	2	69.95
PS168	Middle	SRT 3	3	52.28
PS169	Middle	SRT 1	1	76.46
PS170	Middle	SRT 3	1	71.19
PS171	Middle	SRT 2	2	73.63
PS172	Middle	SRT 2	2	81.38
PS173	Middle	SRT 2	10	75.33
PS174	Middle	SRT 4	8	63.33

Table 3. Description of 78 Schools in Research Study, continued

PS175	Middle	SRT 1	11	66.72
PS176	Middle	SRT 4	6	54.47
PS177	Middle	SRT 3	6	65.71
PS178	Middle	SRT 1	8	51.60

Tables 4 and 5 provide descriptions for the 34 targeted original ranked low-performance schools (Table 4) and the remaining 44 higher original ranked performance schools (Table 5). In each table, the grade level, year one DSCM score, year one DSCM category, year six DSCM score, year six DSCM category, and school improvement are listed for each school. School improvement is operationalized as the change in DSCM score from year one to year six. Positive school improvement numbers indicate that the school improved its score, while negative numbers indicate a decrease in score from year one to year six.

Table 4. Description of 34 Originally Low-Performing Schools

School	Grade Level	DSCM 2000 Score	DSCM 2000 Category	DSCM 2006 Score	DSCM 2006 Category	School Improvement (Change in DSCM Score)
PS102	Elementary	22.15	Directed	57.34	Directed	35.19
PS103	Elementary	26.81	Directed	60.53	Directed	33.72
PS106	Elementary	31.10	Directed	72.32	Collaborative	41.22

Table 4. Description of 34 Originally Low-Performing Schools, continued

PS164	Middle	34.10	Directed	82.19	Collaborative	48.09
PS109	Elementary	40.57	Directed	84.06	NonDirective	43.49
PS113	Elementary	42.20	Directed	73.82	Collaborative	31.62
PS114	Elementary	35.20	Directed	53.28	Directed	18.08
PS115	Elementary	44.17	Directed	77.36	Collaborative	33.19
PS116	Elementary	30.72	Directed	83.21	Collaborative	52.49
PS118	Elementary	17.16	Directed	53.78	Directed	36.62
PS120	Elementary	39.52	Directed	82.95	Collaborative	43.43
PS167	Middle	38.09	Directed	82.25	Directed	44.16
PS128	Elementary	39.02	Directed	58.23	Directed	19.21
PS131	Elementary	42.57	Directed	60.08	Directed	17.51
PS169	Middle	35.94	Directed	70.90	Collaborative	34.96
PS132	Elementary	22.55	Directed	83.55	NonDirective	61.00
PS170	Middle	43.00	Directed	60.08	Collaborative	17.08
PS133	Elementary	42.56	Directed	91.75	NonDirective	49.19
PS171	Middle	25.82	Directed	73.63	Collaborative	47.81
PS136	Elementary	37.56	Directed	88.95	Collaborative	51.39
PS172	Middle	38.90	Directed	75.82	Collaborative	36.92
PS138	Elementary	26.90	Directed	85.61	NonDirective	58.71
PS173	Middle	33.71	Directed	86.44	Collaborative	52.73
PS140	Elementary	25.50	Directed	49.74	Directed	24.24
PS141	Elementary	25.16	Directed	82.15	Collaborative	56.99

Table 4. Description of 34 Originally Low-Performing Schools, continued

PS143	Elementary	21.86	Directed	63.57	Directed	41.71
PS144	Elementary	40.90	Directed	57.58	Directed	16.68
PS175	Middle	41.11	Directed	72.27	Directed	31.16
PS145	Elementary	19.31	Directed	62.47	Directed	43.16
PS148	Elementary	40.51	Directed	96.50	NonDirective	55.99
PS177	Middle	43.54	Directed	71.26	Directed	27.72
PS149	Elementary	41.77	Directed	35.45	Directed	-6.32
PS152	Elementary	36.37	Directed	66.97	Directed	30.60
PS153	Elementary	23.00	Directed	56.77	Directed	33.77
	Totals	33.80	34 Directed	70.97	16 Directed 13 Collaborative, & 5 Non-Directive	37.16

Table 5. Description of 44 Originally High-Performing Schools

School	Grade Level	DSCM 2000 Score	DSCM 2000 Category	DSCM 2006 Score	DSCM 2006 Category	School Improvement (Change in DSCM Score)
PS101	Elementary	57.88	Directed	64.17	Directed	6.29
PS104	Elementary	70.69	Collaborative	69.92	Collaborative	-0.77
PS105	Elementary	57.70	Directed	41.29	Directed	-16.41
PS107	Elementary	79.30	Collaborative	90.71	NonDirective	11.41

Table 5. Description of 44 Originally High-Performing Schools

PS108	Elementary	63.09	Directed	70.97	Collaborative	7.88
PS165	Middle	46.33	Directed	79.26	Collaborative	32.93
PS155	High	57.00	Directed	51.54	Directed	-5.46
PS110	Elementary	62.78	Directed	76.32	Collaborative	13.54
PS111	Elementary	78.25	Collaborative	87.71	NonDirective	9.46
PS112	Elementary	71.34	Collaborative	82.71	Collaborative	11.37
PS166	Middle	50.34	Directed	58.08	Collaborative	7.74
PS117	Elementary	60.34	Directed	56.83	Directed	-3.51
PS156	High	67.40	Directed	55.26	Directed	-12.14
PS119	Elementary	54.23	Directed	88.31	NonDirective	34.08
PS121	Elementary	54.20	Directed	81.56	Collaborative	27.36
PS122	Elementary	72.30	Collaborative	64.77	Directed	-7.53
PS123	Elementary	56.52	Directed	61.88	Directed	5.36
PS157	High	78.61	Collaborative	63.2	Directed	-15.41
PS124	Elementary	69.30	Collaborative	73.96	Collaborative	4.66
PS125	Elementary	54.49	Directed	74.06	Collaborative	19.57
PS126	Elementary	50.98	Directed	56.18	Directed	5.2
PS127	Elementary	53.38	Directed	71.96	Collaborative	18.58
PS129	Elementary	47.03	Directed	67.07	Directed	20.04
PS168	Middle	76.87	Collaborative	46.72	Directed	-30.15
PS130	Elementary	85.00	NonDirective	80.32	Collaborative	-4.68
PS158	High	63.76	Directed	76.84	Collaborative	13.08
PS134	Elementary	46.27	Directed	80.61	Collaborative	34.34
PS135	Elementary	76.63	Collaborative	80.52	Collaborative	3.89

Table 5. Description of 44 Originally High-Performing Schools, continued

PS159	High	81.00	Collaborative	73.55	Collaborative	-7.45
PS137	Elementary	24.86	Directed	59.83	Directed	34.97
PS139	Elementary	61.53	Directed	65.33	Directed	3.8
PS142	Elementary	85.50	NonDirective	85.26	NonDirective	-0.24
PS160	High	69.57	Collaborative	38.41	Directed	-31.16
PS161	High	60.83	Directed	60.67	Directed	-0.16
PS174	Middle	46.86	Directed	68.89	Directed	22.03
PS162	High	63.00	Directed	72.62	Collaborative	9.62
PS146	Elementary	61.69	Directed	95.7	NonDirective	34.01
PS147	Elementary	72.24	Collaborative	73.06	Collaborative	0.82
PS176	Middle	48.53	Directed	58.84	Collaborative	10.31
PS163	High	63.50	Directed	51.29	Directed	-12.21
PS150	Elementary	70.29	Collaborative	82.76	Collaborative	12.47
PS151	Elementary	57.00	Directed	66.17	Directed	9.17
PS154	Elementary	50.50	Directed	41.05	Directed	-9.45
PS178	Middle	60.39	Directed	68.27	Directed	7.88
Totals		62.26	29 Directed 13 Collaborative, & 2 Non-Directive	68.51	20 Directed 19 Collaborative, & 5 Non-Directive	6.25

Tests of Hypotheses

Impact of School Grade Level on School Improvement (H1)

The mean measurement of school improvement based on principal experience and school grade level is given in Figure 4. As noted in the figure, elementary schools demonstrated greater levels of school improvement for three of four categories of principal experience, while secondary schools showed greater improvement than elementary schools for those schools with the most experienced principals.

		Grade Level	
		Elementary	Secondary
Principal Experience	1 - 2 years	n=9 38.65	n=10 13.24
	3 – 4 years	n=17 17.73	n=4 -1.90
	5 – 6 years	n=13 25.95	n=5 21.38
	7 or more years	n=15 14.80	n=5 19.68

Figure 4. Mean School Improvement (Change in Differentiated Supervision Classification Model Score) Based on Principal Experience and Grade Level.

Hypothesis H1 predicted that there is no statistically significant difference between the improvement of elementary schools and secondary schools that have implemented a DSCM model. This hypothesis is examined by analyzing the impact of

principal experience and school grade level on the overall school improvement level. A two-way analysis of variance (ANOVA) was used to test the impact of the two independent variables on school improvement. As shown in Table 6, principal experience moderately affected school improvement in the DSCM framework ($F = 2.221$, $p = .093$). School grade level significantly impacted school improvement under DSCM ($F = 4.394$, $p = .040$). H1 is rejected by this analysis. Overall, elementary schools and schools with less principal experience showed greater improvement under the DSCM than secondary schools and schools with principals with tenure greater than seven years.

Table 6. ANOVA Results. Dependent Variable: Score in 2006 less score in 2000 (School Improvement)

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Principal Experience	2852.215	3	950.738	2.221	.093
School Grade Level	1881.123	1	1881.123	4.394	.040
Principal Experience * School Grade Level	2308.007	3	769.336	1.797	.156
Error	29970.575	70	428.151		
Total	66784.663	78			
Corrected Total	36433.213	77			

$R^2 = .177$ ($F = 2.156$, $p = .049$; Adjusted $R^2 = .095$)

Impact of Original Performance on School Improvement (H2)

The mean change in score (school improvement) for original low performing schools significantly outpaced that of the original higher performing schools as represented in Table 7. The mean school improvement for original low performing school measured 37.16 compared to 6.25 for the original high performing schools. Additionally, the mean DSCM score for original low performing schools (70.97) actually exceeds that of the originally high performing schools (68.51) by year six of implementation.

Table 7. Descriptive Statistics: School Improvement of Originally Low versus High Performing Schools

	Group	N	Mean	Std. Deviation	Std. Error Mean
Change in score	Target group of 34	34	37.16	14.81102	2.54007
	Other Schools	44	6.25	15.89981	2.39699
Score in 2006	Target group of 34	34	70.97	14.01704	2.40390
	Non-focus group	44	68.51	13.68598	2.06324
Score in 2000	Target group of 34	34	33.80	8.22053	1.40981
	Non-focus group	44	62.26	12.36582	1.86422

Hypothesis H2 predicted that there is no statically significant difference between the improvement of schools originally ranked lowest in performance scores and subsequently received the highest levels of supervision would show significantly greater

improvement than the schools that received higher original performance scores. This hypothesis is examined by analyzing the change in score, the DSCM 2000 score, and the DSCM 2006 score for the target group of the original 34 lowest performing schools versus the other schools. An Independent Samples T-test was utilized to compare the two groups of schools. As indicated by Table 8, H2 is rejected because the mean school improvement of originally lower performing schools is significantly higher than originally higher performing schools ($T = 8.769$, $p = .000$).

Table 8. Independent Samples T-Test Results. School Improvement of Lower versus Higher Performing Schools.

	Levene's Test for Equality of Variances		t-test for Equality of Means			
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference
Equal variances assumed	.037	.848	8.769	76	.000	30.9091
Equal variances not assumed			8.850	73.321	.000	30.9091

Impact of Socioeconomic Status on School Improvement (H3)

The mean change in score (school improvement) is highest for schools with 0% to 49% socioeconomic status (30.19). Schools with a 50% to 69% socioeconomic status had the lowest level of school improvement at 5.90. Overall, schools at every level of overall socioeconomic status demonstrated school improvement, and the mean overall

improvement in DSCM score was 19.73. With the exception of schools with a socioeconomic status range of 50 to 69 percent of students, schools with lower percentages of impoverished students showed greater levels of improvement under the DSCM framework.

Table 9. Descriptive Statistics. Mean School Improvement Based On Socioeconomic Status by Group Ranges

Group Ranges in Percent	Mean	N
90 to 100	15.60	18
80 to 89	24.13	23
70 to 79	26.87	15
50 to 69	5.90	15
0 to 49	30.19	7
Total	19.73	78

Hypothesis H3 predicted that there is no statically significant difference in the improvement of schools based on socioeconomic status level of the student body as a result of the implementation of the DSCM. This hypothesis is examined by analyzing the impact of socioeconomic status on school improvement. An ANOVA was utilized to test the impact of socioeconomic status on school improvement. As indicated by Table 10, schools with lower levels of poverty showed significantly higher levels of improvement under the DSCM framework ($F = 3.008$, $p = .024$). Therefore, H3 is rejected because socioeconomic status is statically significant within the DSCM model.

Table 10. ANOVA Results. Dependent Variable: Score in 2006 less score in 2000 (School Improvement)

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Socioeconomic Status	5155.553	4	1288.888	3.008	.024
Error	31277.660	73	428.461		
Total	66784.663	78			
Corrected Total	36433.213	77			

R^2 = .142 (F=3.01, p=. 024; Adjusted R^2 = .094)

Impact of Principal Experience on School Improvement (H4)

As represented in Table 11, 58 out of the 78 schools have principals with one to six years of tenure, while 20 schools have principal with seven or more years of tenure. The table also shows that 41 out of the 78 subject schools have greater than or equal to 80% of students on free or reduced lunch. Table 12 describes the mean school improvement statistics for schools based on the two categories of principal experience and the five categories of socioeconomic status. The mean change in score for schools with principals with one to six years of tenure is five percentage points higher than schools with principals with seven or more years of tenure. With the exception of schools

50 to 69 percent of students on free or reduced lunch in Table 12, the mean in school improvement increases as student poverty decreases.

Table 11. Descriptive Statistics: Principal Experience and Socioeconomic Status

	Value Label	N
Principal experience with	1 to 6 years	58
7 or more years	7 or more years	20
SES by groups	90 to 100	18
	80 to 89	23
	70 to 79	15
	50 to 69	15
	0 to 49	7

Table 12. Descriptive Statistics: Principal Experience and Socioeconomic Status

Principal experience	SES by groups in percentages	Mean	N
1 to 6 Years	90 to 100	17.1636	14
	80 to 89	27.4559	17
	70 to 79	24.9250	12
	50 to 69	2.3156	9
	0 to 49	31.8817	6
	Total	21.0047	58
7 or more years	90 to 100	10.1125	4
	80 to 89	14.7133	6
	70 to 79	34.6700	3
	50 to 69	11.2650	6
	0 to 49	20.0400	1
	Total	16.0185	20
Total	90 to 100	15.5967	18
	80 to 89	24.1317	23
	70 to 79	26.8740	15
	50 to 69	5.8953	15
	0 to 49	30.1900	7
	Total	19.7262	78

Hypothesis H4 predicted that there is no statistically difference between the improvement of schools based on the years of experience of the principal at the school as a result of

implementing the DSCM model. This hypothesis is examined by analyzing the impact of principal experience and socioeconomic status on the overall school improvement level. A two-way analysis of variance (ANOVA) was used to test the impact of the two independent variables on school improvement. As shown in Table 13, socioeconomic status moderately affected school improvement in the DSCM framework ($F = 2.148$, $p = .084$), yet principal experience is not significant when divided into two categories, which indicates that H4 is rejected. However, the earlier Table 6 that showed a moderately significant effect of principal tenure on school improvement when principal tenure is divided into four categories which also supports the rejection of H4.

Table 13. ANOVA Results. Dependent Variable: Score in 2006 less score in 2000 (School Improvement)

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Principal Experience	69.545	1	69.545	.159	.691
Socioeconomic Group	3761.210	4	940.303	2.148	.084
Principal Experience * SESGROUP	1435.638	4	358.909	.820	.517
Error	29766.454	68	437.742		
Total	66784.663	78			
Corrected Total	36433.213	77			

$R^2 = .183$ ($F = 1.692$, $p = .108$; Adjusted $R^2 = .075$)

Impact of Monetary Resource Allocation on School Improvement (H5)

There are 45 schools that receive $800 to $821 per student of federal Title I funding compared to 33 that receive $0 to $700 per student. As shown in Table 14, schools that received higher levels of this monetary allocation registered greater improvements in DSCM score (25.33) versus schools that received lower levels of funding (13.02).

Table 14. Descriptive Statistics: Mean Change in DSCM score based on the FY07 Title 1 per pupil allocation

Title I allocation for 2007 per student	N	School Improvement
$0 to $700 per student	33	13.02
$800 to $821 per student	45	25.33

H5 predicted that there is no statistically significant difference in the improvement of schools based on monetary resources allocated to schools as the result of implementing the DSCM model. As shown in Table 15, an independent samples t-test shows that monetary funding is a significant factor in the improvement of schools ($p = .013$). The monetary resources allocated to schools significantly impact the ability of schools to improve within the DSCM framework. H5 is rejected by this analysis.

Table 15. Independent Samples T-Test Results. Change in DSCM score from 2000 to 2006 based on the FY07 Title 1 per pupil allocation

	Levene's Test for Equality of Variances		t-test for Equality of Means			
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference
Equal variances assumed	.270	.605	-2.550	75	.013	-12.31
Equal variances not assumed			-2.487	61.909	.016	-12.31

CHAPTER VI

DISCUSSION AND IMPLICATIONS OF FINDINGS

Findings

This study examines the ability of a differentiated supervision model to initiate quality improvements in school systems by classifying schools according to several identified factors and modifying the resources allocated to all schools based on their supervision classification. This study was based on the premise that individual schools vary in their resource needs due to both internal and external factors, and school systems can improve the performance of individual schools by customizing the supervision of and resources allocated to those schools.

Conceptual development and an archival post-hoc analysis approach were used to analyze the effects of the supervision model on the improvement of schools in a large urban school district. The researcher developed the supervision model and collected data regarding school characteristics, classification, and performance for individual schools during the first and sixth years of implementation.

The researcher found that the grade level of schools, the years of experience of school principals, the socioeconomic status of schools, and monetary funding significantly impact the ability of the differentiated supervision model to impact school improvement. Additionally, the results of the study indicate that schools with the lowest

performance (or greatest need) at the initiation of the classification model had significantly higher levels of improvement than schools with higher performance initially. While schools in every category improved under the DSCM model, those schools with original low levels of performance eventually registered DSCM scores that exceeded those of schools with originally high performance.

Implications

Elementary schools demonstrated greater levels of school improvement for three of four categories of principal experience, while secondary schools showed greater improvement than elementary schools for those schools with the most experienced principals. Overall, elementary schools and schools with less principal experience showed greater improvement under the DSCM than secondary schools and schools with principals with tenure greater than seven years. These findings imply that improving the quality of teaching and learning is more challenging for secondary schools than it is for elementary schools. Secondary schools are more complex entities therefore stable leadership is important.

The mean school improvement for original low performing school measured 594% greater than the original high performing schools. Additionally, the mean DSCM score for original low performing schools actually exceeds that of the originally high performing schools by year six of implementation. The findings of H2 implies that when schools with greater needs are properly identified and subsequently provided the attention needed to fill the gaps in the quality of teaching and learning improvements in progress

and performance indicators will be realized. Additionally, this finding also supports the notion that change takes time.

The mean change in score (school improvement) is highest for schools with 0% to 49% socioeconomic status. Schools with a 50% to 69% socioeconomic status had the lowest level of school improvement. It is important to note that four of the secondary schools in the 50% to 69% had an average change in score loss of 17.49, which greatly affected this groups average school improvement. The mean change in score (15.60%) for schools with a socioeconomic range of 90% to 100% (18 schools) is nearly half the mean change in score (30.19) of schools with a socioeconomic range of 0% to 49%. The findings of H3 imply that as socioeconomic status increases the rate of school improvement decreases.

Principal experience is not significant when divided into only two categories. However, H4 showed moderately significant effect of principal tenure on school improvement when principal tenure is divided into four categories. The findings of H4 implies that the processes related to the recruitment, selection, hiring and induction of school level leadership were more effective than other years.

Monetary resources allocated to schools significantly impact the ability of schools to improve within the DSCM framework. The findings of H5 imply that as school funding which leads to additional resources increase that schools significantly improve on their progress and performance indicators.

Limitations of the Study

While this study developed a viable supervision and resource allocation model that resulted in significant levels of school improvement, the results of the study may not be generalizable to school districts that serve different student body populations. For example, it is unknown whether similar levels of improvement would be found in suburban or rural districts, districts that serve few minority students, and or districts that are smaller in size. However, the utilization of single school district allowed for the prevention of district effects and the control of other factors that may have influenced the results, such as teacher training and central office administrative structure.

Additionally, the factors that were found to significantly impact the ability of schools to improve under the DSCM framework may vary based on the aforementioned district characteristics. It is important to examine such a framework in various district settings and to potentially further customize the model itself based on the identified improvement needs of school districts.

Findings

Recommendations

The conclusions drawn from the findings suggest that utilizing a customized approach to the supervision of individual schools and the resources allocated to those schools can lead to performance improvements. School systems can benefit from the reduction in scarce resources necessary for schools that require less direct supervision and the increased performance results from schools that are assigned increased supervision and resources. Based on the findings of each hypothesis the following

recommendations may impact administrative practices in school district across the country:

1. Based on the results of H1 it is evident that a greater amount of resources, supervision and support are needed for secondary schools.
2. Based on the implications of H2 districts should continually identify schools with greater needs by use of progress and performance indicators. Too often districts focus only student test data and quickly abandon change efforts without making sure that sufficient progress is not being made.
3. Based on the findings and implications of H3, districts should make every attempt to significantly increase the resources, supervision, and support to schools that have the highest percent of students on free and reduced lunch.
4. Based on the implications of H4, districts should begin implementing processes to document and evaluate human resource practices related to the recruitment, selection, hiring and induction of school level leadership.

Based on the findings of each hypothesis the following recommendations may impact policy regulations and practices in school district across the country:

1. Based on the results of H1 it is evident that as secondary principals are hired additional incentives related to school improvement should be considered to encourage extended retention.
2. A major policy change that should occur based on the implications of H5, is local, state and the federal government must find a way and the means to provide additional resources to districts and schools that show the greatest needs.

Future research should carefully track all monetary resources as well as human resources that are allocated to individual schools based on their DSCM classification. Such an analysis will provide a rich set of data for analysis of the benefits of customized resource allocation. It is important to provide schools with needed resources to aid their quality improvements while managing the scarce resources allotted to education in a fiscally prudent manner.

Another key area of research is whether the differentiated supervision classification model can provide school level administrators a viable methodology in supporting and supervising classroom teachers based on teacher targets and student performance levels. Individual teacher progress and performance indicators could identify specific needs related instruction, professional development, and/or resources. It is strongly recommended that the differentiated supervision classification model is implemented with the intention of identifying teachers and/or schools that have greater needs.

Appendix A

Detailed Differentiated Supervision Classification Model Documentation

ATLANTA PUBLIC SCHOOLS

DIFFERENTIATED SUPERVISION CLASSIFICATION MODEL 2000-2001

Definitions and Criteria for Categories

BEVERLY L. HALL, ED.D
Superintendent

KATHY M. AUGUSTINE
Deputy Superintendent

CREATED AND PREPARED BY: ADRIAN L. EPPS
Coordinator of Special Projects

Rationale

The optimal goal of Atlanta Public Schools is to improve student achievement systemically. The purpose of the Differentiated Supervision Classification Model is two-fold: 1) to recognize schools that consistently move toward the optimal goal; and 2) to identify schools with the greatest need for assistance in achieving that goal. A school's Differentiated Supervision Classification is determined by the utilization of a weighted formula with 50% assigned to progress data and the other 50% distributed across performance data. Progress data is defined as the individual school targets that contribute to the achievement of system targets in the areas of student achievement on standardized tests, attendance and enrollment in higher-level courses. Performance data is defined as the results of student performance on state mandated standardized test (CRCT, ITBS/Stanford 9, Writing Assessment, GHSGT). This model places Atlanta Public Schools in a proactive position to address the student achievement components of the A Plus Education Reform Act of 2000.

Methodology

Elementary Calculation: Compilation of one-half (50%) of the percentage of targets met, plus three-tenths (30%) of the percentages of the 4th grade CRCT's results, plus one-fifth (20%) of the percentages of the 3rd and 5th grades ITBS results.

Middle School Calculation: Compilation of one-half (50%) of the percentage of targets met, plus 39% of the 6th grade and 8th grade CRCT results, plus 6.5% of the Writing Assessment, plus 4.5% of the 8th grades ITBS results.

High School Calculation: Compilation of one-half (50%) of the percentage of targets met, plus one-tenth (10%) of the percentage of each component on the Georgia High School Graduation Test results that first time test takers pass.

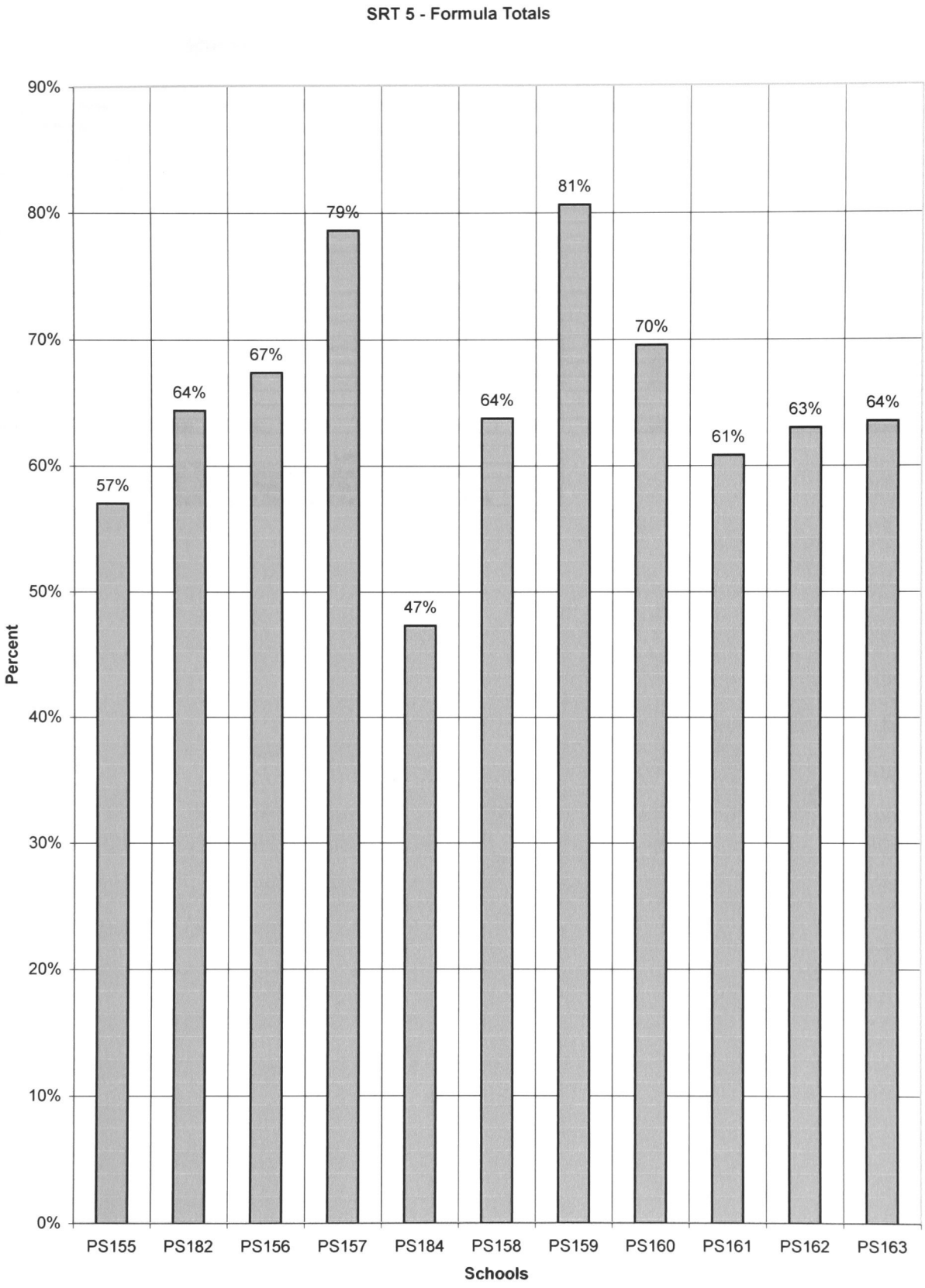
Schools are categorized by the total score as follows:

- Nondirected – 100% - 84%
- Collaborative – 83% - 69%
- Directed – below 69%
- Directed Plus – total score is within the directed range. However, the total score is below the 50% mark and school has not adopted a comprehensive school reform design.

SRT V - Differentiated Supervision Model

School	# Met out of 14	% Met	GHSGT Eng/L.A.	GHSGT Math	GHSGT Writing	GHSGT Socia Studies	GHSGT Science		Formula Total	Supervision Model
		50%	10%	10%	10%	10%	10%			
PS155	7	50.0	74	73	72	64	37	=	57%	Directed
PS182	8	57.1	82	69	81	57	69	=	64%	Directed
PS156	7	50.0	92	89	91	83	69	=	67%	Directed
PS157	10	71.4	92	90	89	85	73	=	79%	Collaborative
PS184	4	28.6	81	56	86	47	60	=	47%	Directed
PS158	5	35.7	98	94	88	92	87	=	64%	Directed
PS159	10	71.4	95	94	94	90	76	=	81%	Collaborative
PS160	8	57.1	94	88	71	80	77	=	70%	Collaborative
PS161	6	42.9	92	87	83	80	52	=	61%	Directed
PS162	7	50.0	88	88	90	66	48	=	63%	Directed
PS163	7	50.0	80	74	82	59	90	=	64%	Directed
Formula Cl	14	100.0	100	100	100	100	100	=	100%	Non-Directed

Legend
GHSGT: Percentage of first time test takers successfully passing respective subject areas.


SRT 5 - Formula Totals
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80%
70%
60%
50%
40%
30%
20%
10%
0%
Percent
57%
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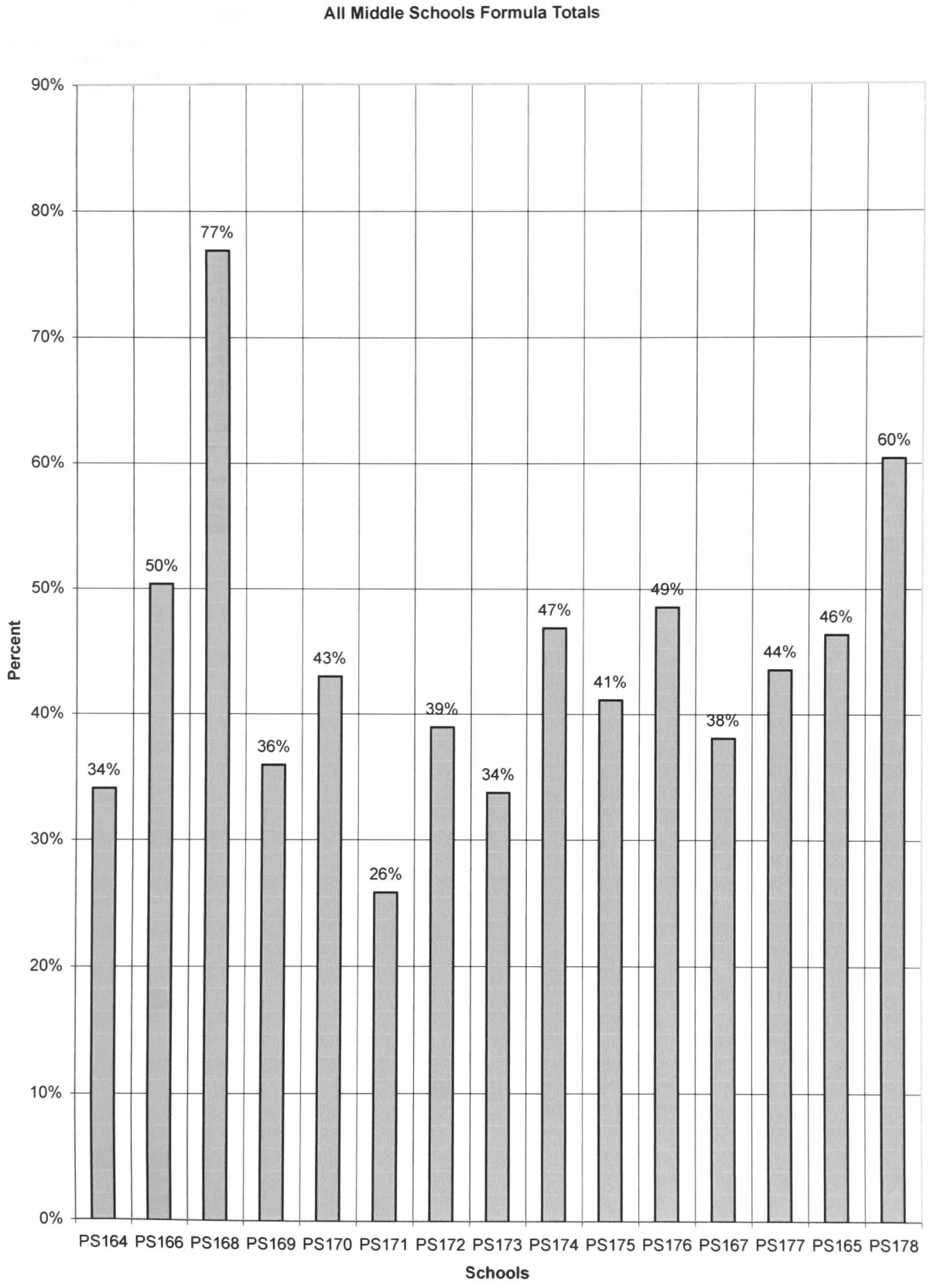
67%
79%
47%
64%
81%
70%
61%
63%
64%
PS155
PS182
PS156
PS157
PS184
PS158
PS159
PS160
PS161
PS162
PS163
Schools

Middle Schools Differentiated Supervision Model

	Target		CRCT Met or Exceed	CRCT Met or Exceed	CRCT Met or Exceed	CRCT Met or Exceed	CRCT Met or Exceed	CRCT Met or Exceed	Writing Assess	ITBS	ITBS			
	# Met out of 7	% Met	Read 6	Lang Art 6	Read 8	Lang Art 8	Math 6	Math 8	% 349 +	Read 8	Math 8		Formula Total	Supervision Model
		50.00%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	2.25%	2.25%			
PS181	N/A	N/A	64	54	N/A	N/A	62	no 8th	no 8th	no 8th	no 8th		N/A	Directed
PS164	1	14.3	53	47	64	54	48	36	83	37	49	=	34%	Directed
PS166	4	57.1	44	33	60	46	36	37	54	28	44	=	50%	Directed
PS168	5	71.4	86	78	90	85	79	76	91	65	74	=	77%	Collaborative
PS169	3	42.9	37	28	35	29	28	12	39	22	22	=	36%	Directed
PS170	3	42.9	54	35	55	35	50	25	56	27	36	=	43%	Directed
PS171	1	14.3	39	28	50	36	38	32	38	27	49	=	26%	Directed
PS172	3	42.9	38	25	58	34	26	22	48	24	29	=	39%	Directed Plus
PS173	2	28.6	46	28	54	37	32	38	41	28	38	=	34%	Directed
PS174	2	28.6	72	67	71	64	72	47	68	57	59	=	47%	Directed Plus
PS175	3	42.9	55	36	49	35	35	21	52	27	30	=	41%	Directed
PS176	4	57.1	45	32	63	40	38	24	44	29	32	=	49%	Directed Plus
PS167	2	28.6	52	37	63	48	51	37	53	31	42	=	38%	Directed Plus
PS177	3	42.9	50	35	57	42	37	34	62	30	37	=	44%	Directed Plus
PS165	4	57.1	32	23	47	41	28	28	50	28	42	=	46%	Directed
PS178	4	57.1	69	55	75	63	60	57	77	41	56	=	60%	Directed
Formula Check		100	100	100	100	100	100	100	100	100	100	=	100%	Non-Directed

Legend
CRCT: Percentage of students meeting or exceeding standards
ITBS: ITBS Mean National Percentile Rank
Writing Assessment: Percentage of students scoring 349 or above


All Middle Schools Formula Totals
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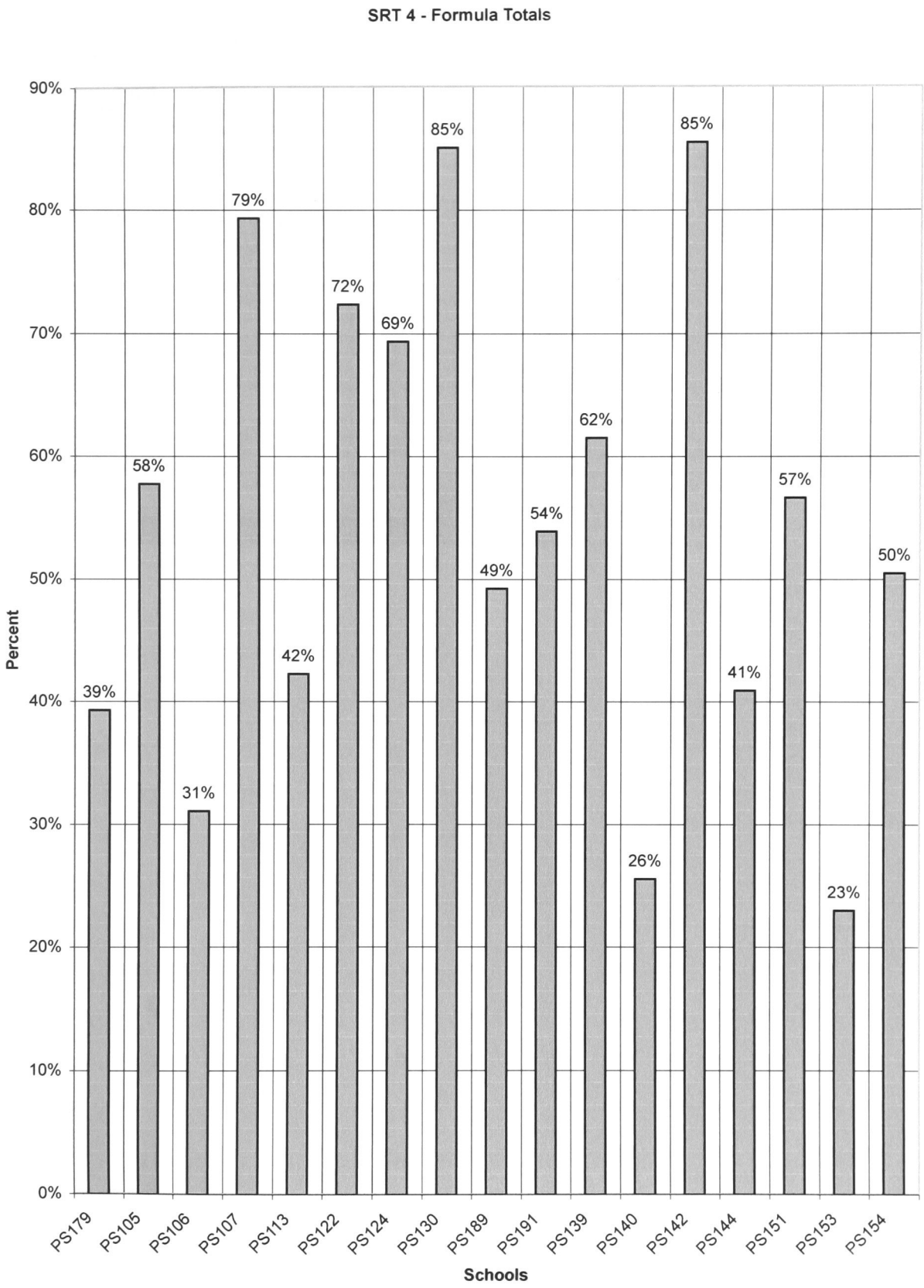
80%
70%
60%
50%
40%
30%
20%
10%
0%
Percent
34%
50%
77%
36%
43%
26%
39%
34%
47%
41%
49%
38%
44%
46%
60%
PS164 PS166 PS168 PS169 PS170 PS171 PS172 PS173 PS174 PS175 PS176 PS167 PS177 PS165 PS178
Schools

SRT IV - Differentiated Supervision Model												
School	Target		Grade 4	Grade 4	Grade 4	Grade 3	Grade 3	Grade 5	Grade 5			
	# Met out of 9	% met	CRCT Reading	CRCT Eng/ L.Arts	CRCT Math	ITBS Reading	ITBS Math	ITBS Reading	ITBS Math		Formula	Supervision
		50%	10%	10%	10%	5%	5%	5%	5%		Totals	Model
PS179	4	44.4	42	40	31	24	23	39	29	=	39%	Directed Plus
PS105	7	77.8	34	50	37	43	39	23	30	=	58%	Directed
PS106	2	22.2	40	47	34	36	33	39	49	=	31%	Directed Plus
PS107	6	66.7	95	98	93	83	92	81	92	=	79%	Collaborative
PS113	4	44.4	34	47	31	61	50	34	31	=	42%	Directed Plus
PS122	7	77.8	66	73	73	54	66	59	66	=	72%	Collaborative
PS124	8	88.9	41	49	31	83	57	53	63	=	69%	Collaborative
PS130	7	77.8	94	98	96	85	92	80	90	=	85%	Non-Directed
PS189	5	55.6	42	49	39	36	44	48	41	=	49%	Directed Plus
PS191	6	66.7	32	45	41	44	63	37	31	=	54%	Directed
PS139	5	55.6	73	76	57	65	68	62	68	=	62%	Directed
PS140	1	11.1	43	46	33	36	38	40	41	=	26%	Directed Plus
PS142	7	77.8	99	99	100	82	97	77	80	=	85%	Non-Directed
PS144	3	33.3	38	52	44	55	58	50	54	=	41%	Directed Plus
PS151	6	66.7	43	52	27	72	63	58	29	=	57%	Directed
PS153	2	22.2	19	24	21	31	23	27	28	=	23%	Directed Plus
PS154	5	55.6	39	46	27	61	46	61	62	=	50%	Directed
Formula Che	*9*	*100.0*	*100*	*100*	*100*	*100*	*100*	*100*	*100*	=	100%	Non-Directed

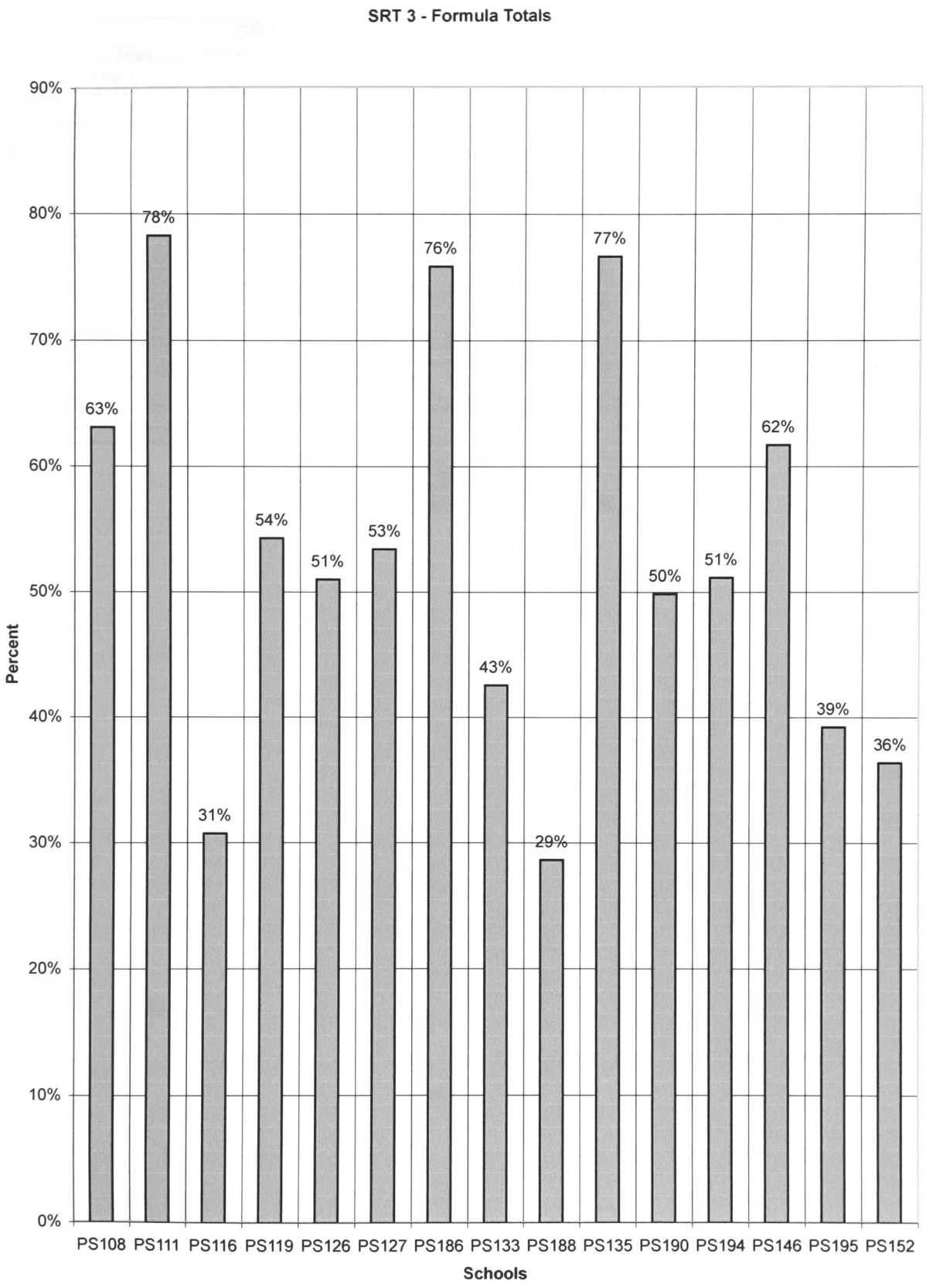
Legend
Grades 3 & 5: ITBS Mean National Percentile Rank
Grade 4: Percentage of students meeting or exceed CRCT standards


SRT 4 - Formula Totals
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Percent
39%
58%
31%
79%
42%
72%
69%
85%
49%
54%
62%
26%
85%
41%
57%
23%
50%
PS179
PS105
PS106
PS107
PS113
PS122
PS124
PS130
PS189
PS191
PS139
PS140
PS142
PS144
PS151
PS153
PS154
Schools

SRT III - Differentiated Supervision Model

School	Target		Grade 4	Grade 4	Grade 4	Grade 3	Grade 3	Grade 5	Grade 5		Formula	Supervision Model
	# Met out of 9	% met	CRCT Reading	CRCT Eng/ L.Arts	CRCT Math	ITBS Reading	ITBS Math	ITBS Reading	ITBS Math		Totals	
		50%	10%	10%	10%	5%	5%	5%	5%			
PS108	7	77.8	49	51	47	57	47	38	48	=	63%	Directed
PS111	9	100.0	61	67	49	51	63	47	50	=	78%	Collaborative
PS116	3	33.3	24	43	27	26	28	21	18	=	31%	Directed
PS119	6	66.7	37	55	49	30	35	34	37	=	54%	Directed
PS126	5	55.6	52	59	43	36	43	40	37	=	51%	Directed
PS127	6	66.7	43	44	33	36	36	48	41	=	53%	Directed
PS186	8	88.9	50	71	67	72	64	59	57	=	76%	Collaborative
PS133	2	22.2	65	70	67	54	63	57	51	=	43%	Directed Plus
PS188	2	22.2	24	43	28	24	25	45	66	=	29%	Directed Plus
PS135	6	66.7	91	92	85	81	88	79	82	=	77%	Collaborative
PS190	5	55.6	43	47	36	23	34	67	65	=	50%	Directed Plus
PS194	4	44.4	60	72	63	37	44	52	55	=	51%	Directed
PS146	8	88.9	30	40	36	38	37	31	27	=	62%	Directed
PS195	2	22.2	61	61	53	57	55	47	53	=	39%	Directed Plus
PS152	3	33.3	38	54	33	28	37	40	39	=	36%	Directed Plus
Formula Ch	*9*	*100.0*	*100*	*100*	*100*	*100*	*100*	*100*	*100*	=	100%	Non-Directed

Legend
Grades 3 & 5: ITBS Mean National Percentile Rank
Grade 4: Percentage of students who met or exceeded CRCT standards


SRT 3 - Formula Totals
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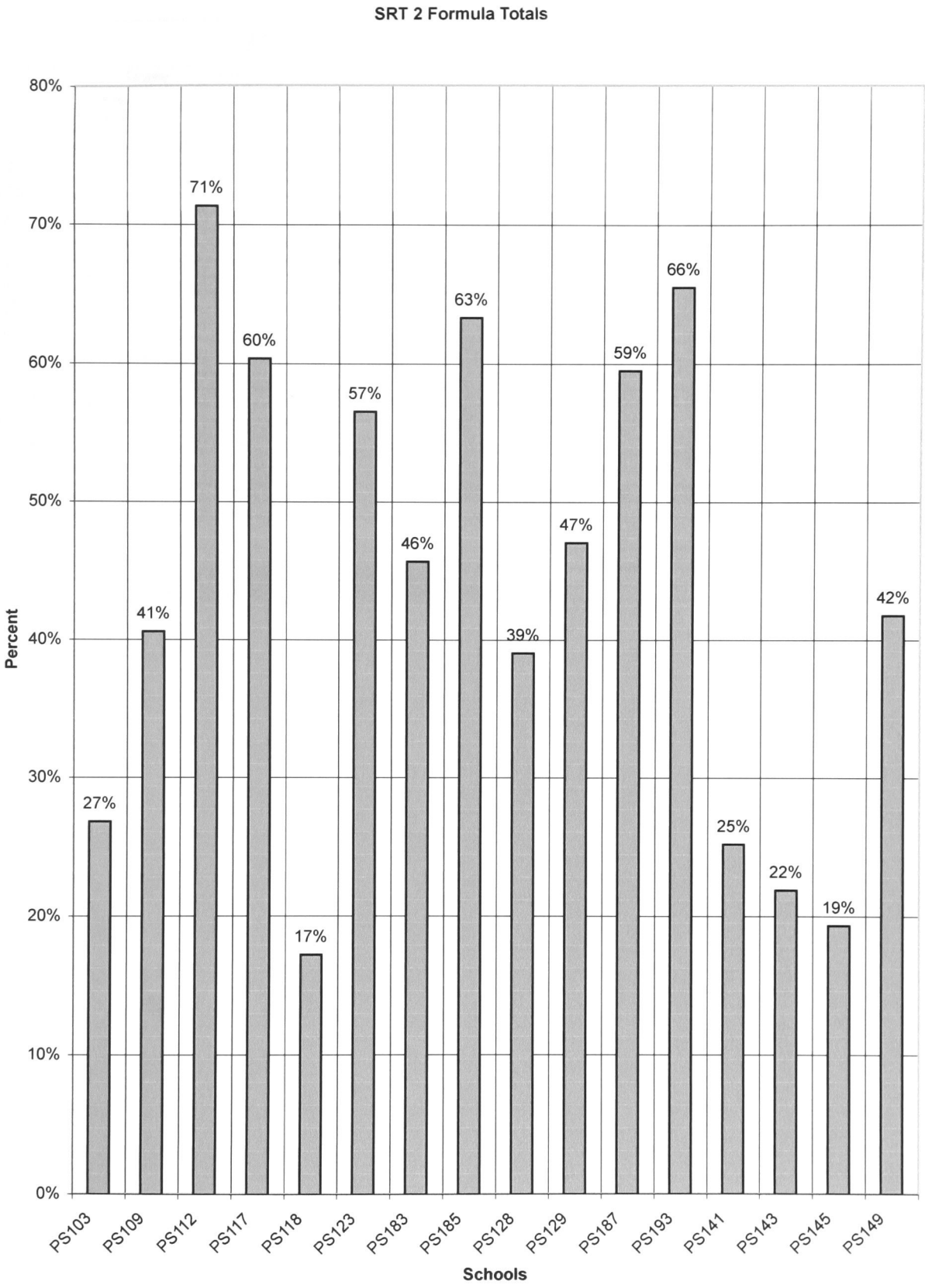
80%
70%
60%
50%
40%
30%
20%
10%
0%
Percent
63%
78%
31%
54%
51%
53%
76%
43%
29%
77%
50%
51%
62%
39%
36%
PS108 PS111 PS116 PS119 PS126 PS127 PS186 PS133 PS188 PS135 PS190 PS194 PS146 PS195 PS152
Schools

SRT II - Differentiated Supervision Model												
	Target		Grade 4	Grade 4	Grade 4	Grade 3	Grade 3	Grade 5	Grade 5			
School	# Met out of 9	% met	CRCT Reading	CRCT Eng/ L.Arts	CRCT Math	ITBS Reading	ITBS Math	ITBS Reading	ITBS Math		Formula Total	Supervision Model
		50%	10%	10%	10%	5%	5%	5%	5%			
PS103	1	11.1	43	46	38	43	54	32	42	=	27%	Directed Plus
PS109	3	33.3	35	52	41	56	60	56	50	=	41%	Directed Plus
PS112	8	88.9	42	61	48	40	61	75	60	=	71%	Collaborative
PS117	7	77.8	43	51	21	36	39	47	77	=	60%	Directed
PS118	1	11.1	26	26	17	21	29	21	23	=	17%	Directed Plus
PS123	4	44.4	84	88	48	70	61	73	42	=	57%	Directed
PS183	5	55.6	29	49	20	32	39	51	40	=	46%	Directed Plus
PS185	7	77.8	42	63	32	52	52	45	65	=	63%	Directed
PS128	3	33.3	46	55	49	30	42	35	40	=	39%	Directed
PS129	5	55.6	39	42	36	39	41	29	42	=	47%	Directed
PS187	7	77.8	28	45	25	33	46	66	71	=	59%	Directed
PS193	9	100.0	19	34	23	39	36	42	41	=	66%	Directed
PS141	2	22.2	20	33	27	23	27	37	34	=	25%	Directed Plus
PS143	1	11.1	24	33	21	65	44	35	26	=	22%	Directed
PS145	1	11.1	19	28	18	34	34	51	26	=	19%	Directed Plus
PS149	4	44.4	38	57	39	28	32	32	31	=	42%	Directed Plus
Formula Che	*9*	*100.0*	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*	=	100%	Non-Directed

Legend
Grades 3 & 5: ITBS Mean National Percentile Rank
Grade 4: Percentage of students who met or exceeded CRCT standards


SRT 2 Formula Totals
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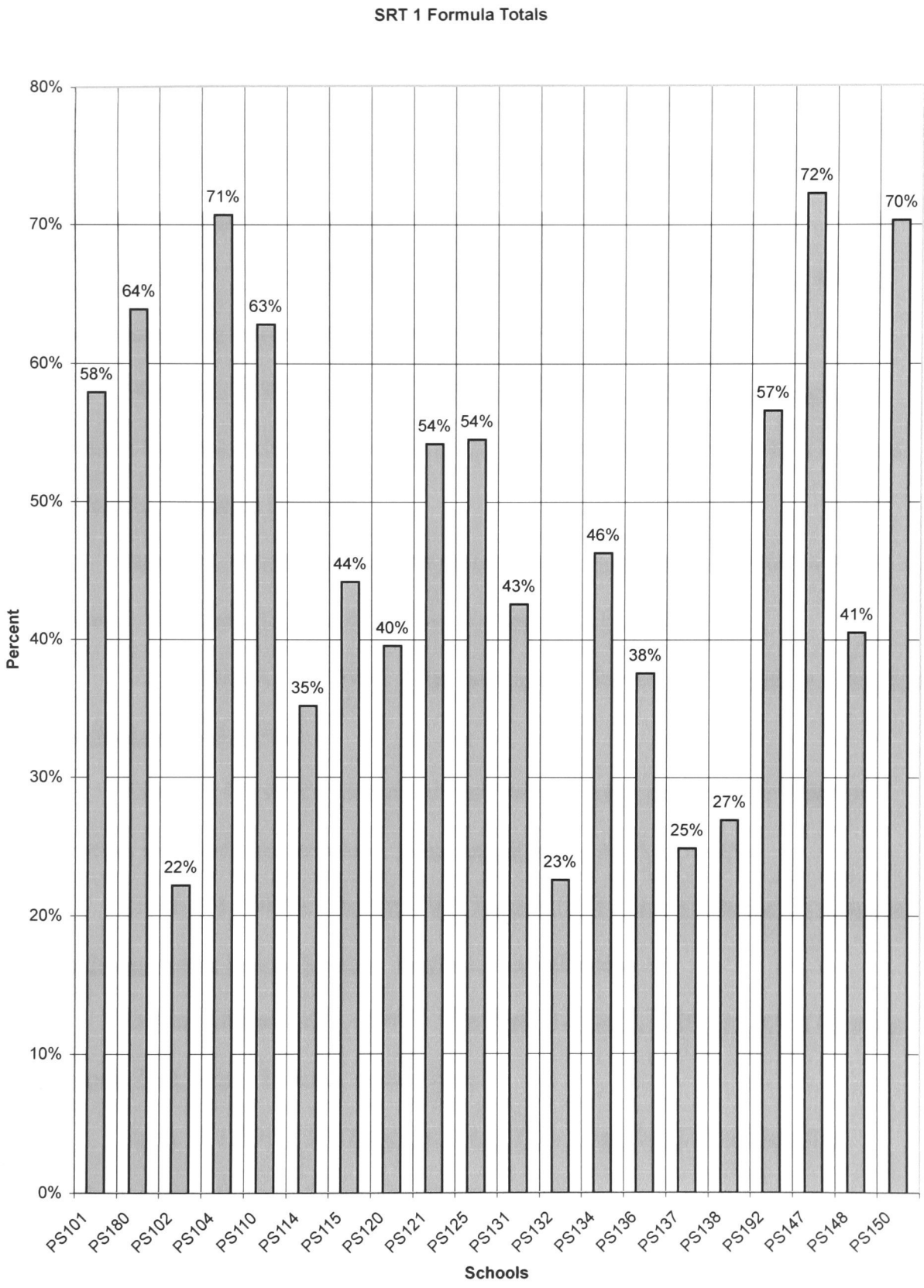
60%
50%
40%
30%
20%
10%
0%
Percent
27%
41%
71%
60%
17%
57%
46%
63%
39%
47%
59%
66%
25%
22%
19%
42%
PS103
PS109
PS112
PS117
PS118
PS123
PS183
PS185
PS128
PS129
PS187
PS193
PS141
PS143
PS145
PS149
Schools

SRT I - Differentiated Supervision Model

	Targets		Grade 3	Grade 3	Grade 4	Grade 4	Grade 4	Grade 5	Grade 5			
School	# Met out of 9	% met	ITBS Reading	ITBS Math	CRCT Reading	CRCT Eng/ L.Arts	CRCT Math	ITBS Reading	ITBS Math		Formula Totals	Supervision Model
		50%	5%	5%	10%	10%	10%	5%	5%			
PS101	6	66.7	41	50	47	55	45	61	54	=	58%	Directed
PS180	7	77.8	43	50	48	61	43	53	61	=	64%	Directed
PS102	0	0.0	54	61	31	37	31	40	43	=	22%	Directed
PS104	8	88.9	48	57	52	64	63	44	40	=	71%	Collaborative
PS110	5	55.6	69	82	64	81	65	61	63	=	63%	Directed
PS114	3	33.3	31	40	37	51	32	40	31	=	35%	Directed Plus
PS115	4	44.4	48	41	48	54	42	31	38	=	44%	Directed Plus
PS120	3	33.3	36	34	40	57	35	72	73	=	40%	Directed Plus
PS121	5	55.6	53	55	49	58	49	56	51	=	54%	Directed
PS125	7	77.8	24	27	32	46	29	36	35	=	54%	Directed
PS131	4	44.4	34	39	41	49	34	50	46	=	43%	Directed
PS132	0	0.0	52	52	36	51	28	45	47	=	23%	Directed Plus
PS134	4	44.4	42	55	49	67	44	37	41	=	46%	Directed Plus
PS136	2	22.2	39	46	56	81	59	47	60	=	38%	Directed
PS137	1	11.1	30	33	48	51	40	40	33	=	25%	Directed
PS138	0	0.0	43	56	55	69	69	40	52	=	27%	Directed Plus
PS192	6	66.7	54	50	44	58	32	34	45	=	57%	Directed
PS147	7	77.8	66	60	82	72	54	70	55	=	72%	Collaborative
PS148	2	22.2	63	62	53	68	51	57	56	=	41%	Directed
PS150	7	77.8	58	59	68	82	64	51	61	=	70%	Collaborative
Formula Check	*9*	100.0	*100*	*100*	*100*	*100*	*100*	*100*	*100*	=	100%	Non-Directed

Legend
Grades 3 & 5: ITBS Mean National Percentile Rank
Grade 4: Percentage of students who met or exceeded CRCT standards


SRT 1 Formula Totals
80%
70%
60%
50%
40%
30%
20%
10%
0%
Percent
58%
64%
22%
71%
63%
35%
44%
40%
54%
54%
43%
23%
46%
38%
25%
27%
57%
72%
41%
70%
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PS114
PS115
PS120
PS121
PS125
PS131
PS132
PS134
PS136
PS137
PS138
PS192
PS147
PS148
PS150
Schools

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